SEQUENCE LISTING

<110> HSC Research and Development Limited Partnership

<120> Human Lymphoid Protein Tyrosine Phosphatases

<130> 92906-2

<140> US 09/600358
<141> 2000-09-25

<150> CA 2,220,853
<151> 1998-01-16

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<170> PatentIn Ver. 2.0

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      Trp Glu Tyr Ser Val Leu Ile Ile Val Met Ala Cys Met Glu Tyr Glu
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      atg gga aag aaa aag tgt gag cgc tac tgg gct gag cca gga gag atg   488
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      Gln Leu Glu Phe Gly Pro Phe Ser Val Ser Cys Glu Ala Glu Lys Arg
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      atg ttg cta aaa gat ggg ata att cct gag aac ttc agt gtt ttc agt   824
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Val Gly Glu Pro Leu Gln Lys His Gln Ser Leu Asp Leu Gly Ser Leu
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Leu Pro Tyr Asp Ser Lys His Gln Ile Arg Asn Ala Ser Asn Val Lys
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cac cat gac tct agt gct ctt ggt gta tat tct tac ata cct tta gtg    1640
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Ser Leu Leu Pro Thr Ser Ser Thr Ser Leu Phe Ser Tyr Tyr Asn Ser
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cat agt tct tta tca ctg aat tct cca acc aat att tcc tca cta ttg    1832
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ccc cca cct cct ctc cca gaa aga act cta gag tcc ttc ttt ctt gcc    2168
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tat cct gac acc atg gaa aat tca aca tct tca aaa cag aca ctg aag    2264
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act cct gga aaa agt ttc aca agg agt aag agt ttg aaa att ttg cga    2312
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aac atg aaa aag agt atc tgt aat tct tgc cca cca aac aag cct gca    2360
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    Pro Tyr Asp Tyr Ser Arg Val Glu Leu Ser Leu Ile Thr Ser Asp Glu
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    Asp Ser Ser Tyr Ile Asn Ala Asn Phe Ile Lys Gly Val Tyr Gly Pro
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    Lys Ala Tyr Ile Ala Thr Gln Gly Pro Leu Ser Thr Thr Leu Leu Asp
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Tyr Ile Pro Leu Val Glu Asn Pro Tyr Phe Ser Ser Trp Pro Pro Ser
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Gly Thr Ser Ser Lys Met Ser Leu Asp Leu Pro Glu Lys Gln Asp Gly
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Arg Ile Asp Asp Glu Ile Pro Pro Pro Leu Pro Val Arg Thr Pro Glu
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Ser Phe Ile Val Val Glu Glu Ala Gly Glu Phe Ser Pro Asn Val Pro
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Lys Ser Leu Ser Ser Ala Val Lys Val Lys Ile Gly Thr Ser Leu Glu
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Trp Gly Gly Thr Ser Glu Pro Lys Lys Phe Asp Asp Ser Val Ile Leu
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Arg Pro Ser Lys Ser Val Lys Leu Arg Ser Pro Lys Ser Glu Leu His
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Gln Asp Arg Ser Ser Pro Pro Pro Pro Leu Pro Glu Arg Thr Leu Glu
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Ser Phe Phe Leu Ala Asp Glu Asp Cys Met Gln Ala Gln Ser Ile Glu
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Thr Tyr Ser Thr Ser Tyr Pro Asp Thr Met Glu Asn Ser Thr Ser Ser
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Lys Gln Thr Leu Lys Thr Pro Gly Lys Ser Phe Thr Arg Ser Lys Ser
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Leu Lys Ile Leu Arg Asn Met Lys Lys Ser Ile Cys Asn Ser Cys Pro
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            40              45              50

    aat atc aag aaa aac aga tat aag gat att ttg ccc tat gat tat agc  248
    Asn Ile Lys Lys Asn Arg Tyr Lys Asp Ile Leu Pro Tyr Asp Tyr Ser
        55              60              65
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    cgg gta gaa cta tcc ctg ata acc tct gat gag gat tcc agc tac atc  296
    Arg Val Glu Leu Ser Leu Ile Thr Ser Asp Glu Asp Ser Ser Tyr Ile
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    aat gcc aac ttc att aag gga gtt tat gga ccc aag gct tat att gcc  344
    Asn Ala Asn Phe Ile Lys Gly Val Tyr Gly Pro Lys Ala Tyr Ile Ala
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    acc cag ggt cct tta tct aca acc ctc ctg gac ttc tgg agg atg att  392
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    cag ctg gaa ttt ggc cct ttc tct gta tcc tgt gaa gct gaa aaa agg    536
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    act cga act atc tac cag ttt cat tac aag aat tgg cca gac cat gat    632
    Thr Arg Thr Ile Tyr Gln Phe His Tyr Lys Asn Trp Pro Asp His Asp
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    gta cct tca tct ata gac cct att ctt gag ctc atc tgg gat gta cgt    680
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        215             220             225

    ggc tgt gga agg act ggt gtt att tgt gct att gtt gat tat aca tgg    776
    Gly Cys Gly Arg Thr Gly Val Ile Cys Ala Ile Val Asp Tyr Thr Trp
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    atg ttg cta aaa gat ggg ata att cct gag aac ttc agt gtt ttc agt    824
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                250             255             260

    ttg atc cgg gaa atg cgg aca cag agg cct tca tta gtt caa acg cag    872
    Leu Ile Arg Glu Met Arg Thr Gln Arg Pro Ser Leu Val Gln Thr Gln
                265             270             275

    gaa caa tat gaa ctg gtc tac aat gct gta tta gaa cta ttt aag aga    920
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    cag atg gat gtt atc aga gat aaa cat tct gga aca gag agt caa gca    968
    Gln Met Asp Val Ile Arg Asp Lys His Ser Gly Thr Glu Ser Gln Ala
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    Lys His Cys Ile Pro Glu Lys Asn His Thr Leu Gln Ala Asp Ser Tyr
    310             315             320             325

    tct cct aat tta cca aaa agt acc aca aaa gca gca aaa atg atg aac    1064
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    caa caa agg aca aaa atg gaa atc aaa gaa tct tct tcc ttt gac ttt    1112
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aaa tca agc act tct ttt gac ttt ctg gag cta aat tac agt ttt gac    1208
Lys Ser Ser Thr Ser Phe Asp Phe Leu Glu Leu Asn Tyr Ser Phe Asp
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aaa aat gct gac aca acc atg aaa tgg cag aca aag gca ttt cca ata    1256
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gtt ggg gag cct ctt cag aag cat caa agt ttg gat ttg ggc tct ctt    1304
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ttt tct tat ttg gaa tct caa cca cat gat tct tgt ttt gta gag atg    1496
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His His Asp Ser Ser Ala Leu Gly Val Tyr Ser Tyr Ile Pro Leu Val
            520             525             530

gaa aat cct tat ttt tca tca tgg cct cca agt ggt acc agt tct aag    1688
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tct ctg ttg cca aca tcc tct aca tcc ctc ttc tct tat tac aat tca    1784
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cat agt tct tta tca ctg aat tct cca acc aat att tcc tca cta ttg   1832
His Ser Ser Leu Ser Leu Asn Ser Pro Thr Asn Ile Ser Ser Leu Leu
            585                 590                 595

aac cag gag tca gct gta cta gca act gct cca agg ata gat gat gaa   1880
Asn Gln Glu Ser Ala Val Leu Ala Thr Ala Pro Arg Ile Asp Asp Glu
            600                 605                 610

atc ccc cct cca ctt cct gta cgg aca cct gaa tca ttt att gtg gtt   1928
Ile Pro Pro Pro Leu Pro Val Arg Thr Pro Glu Ser Phe Ile Val Val
            615                 620                 625

gag gaa gct gga gaa ttc tca cca aat gtt ccc aaa tcc tta tcc tca   1976
Glu Glu Ala Gly Glu Phe Ser Pro Asn Val Pro Lys Ser Leu Ser Ser
630                 635                 640                 645

gct gtg aag gta aaa att gga aca tca ctg gaa tgg ggt gga aca tct   2024
Ala Val Lys Val Lys Ile Gly Thr Ser Leu Glu Trp Gly Gly Thr Ser
            650                 655                 660

gaa cca aag aaa ttt gat gac tct gtg ata ctt aga cca agc aag agt   2072
Glu Pro Lys Lys Phe Asp Asp Ser Val Ile Leu Arg Pro Ser Lys Ser
            665                 670                 675

gta aaa ctc cga agt cct aaa tca ggt aaa aat ttc tct tgg ctt       2117
Val Lys Leu Arg Ser Pro Lys Ser Gly Lys Asn Phe Ser Trp Leu
            680                 685                 690


tagatgacat ttagccctaa gattggaaga atggttcgtt aagtttagag taattcactt 2177
caggaagtta cttggttccc ataatagctt ccagtattca ttgatttatt tctggctttc 2237
ccagactaga aattttgtaa agagtcatgg gggaagctag ggctaaccag aaaataaaat 2297
aaaaataatg ggataaaaaa tcggaactac tgttttcccc ctagtcggag cacatccgg  2356


<210> 4
<211> 692
<212> PRT
<213> Homo sapiens

<400> 4
Met Asp Gln Arg Glu Ile Leu Gln Lys Phe Leu Asp Glu Ala Gln Ser
  1               5                  10                  15

Lys Lys Ile Thr Lys Glu Glu Phe Ala Asn Glu Phe Leu Lys Leu Lys
             20                  25                  30

Arg Gln Ser Thr Lys Tyr Lys Ala Asp Lys Thr Tyr Pro Thr Thr Val
            35                  40                  45

Ala Glu Asn Ala Lys Asn Ile Lys Lys Asn Arg Tyr Lys Asp Ile Leu
        50                  55                  60

Pro Tyr Asp Tyr Ser Arg Val Glu Leu Ser Leu Ile Thr Ser Asp Glu
65                  70                  75                  80

Asp Ser Ser Tyr Ile Asn Ala Asn Phe Ile Lys Gly Val Tyr Gly Pro
                85                  90                  95
```

```
       Lys Ala Tyr Ile Ala Thr Gln Gly Pro Leu Ser Thr Thr Leu Leu Asp
                   100             105             110

       Phe Trp Arg Met Ile Trp Glu Tyr Ser Val Leu Ile Ile Val Met Ala
               115             120             125

       Cys Met Glu Tyr Glu Met Gly Lys Lys Lys Cys Glu Arg Tyr Trp Ala
               130             135             140

 10    Glu Pro Gly Glu Met Gln Leu Glu Phe Gly Pro Phe Ser Val Ser Cys
       145             150             155             160

       Glu Ala Glu Lys Arg Lys Ser Asp Tyr Ile Ile Arg Thr Leu Lys Val
                   165             170             175

       Lys Phe Asn Ser Glu Thr Arg Thr Ile Tyr Gln Phe His Tyr Lys Asn
                   180             185             190

       Trp Pro Asp His Asp Val Pro Ser Ser Ile Asp Pro Ile Leu Glu Leu
 20            195             200             205

       Ile Trp Asp Val Arg Cys Tyr Gln Glu Asp Asp Ser Val Pro Ile Cys
           210             215             220

       Ile His Cys Ser Ala Gly Cys Gly Arg Thr Gly Val Ile Cys Ala Ile
       225             230             235             240

       Val Asp Tyr Thr Trp Met Leu Leu Lys Asp Gly Ile Ile Pro Glu Asn
                   245             250             255
 30
       Phe Ser Val Phe Ser Leu Ile Arg Glu Met Arg Thr Gln Arg Pro Ser
                   260             265             270

       Leu Val Gln Thr Gln Glu Gln Tyr Glu Leu Val Tyr Asn Ala Val Leu
               275             280             285

       Glu Leu Phe Lys Arg Gln Met Asp Val Ile Arg Asp Lys His Ser Gly
           290             295             300

 40    Thr Glu Ser Gln Ala Lys His Cys Ile Pro Glu Lys Asn His Thr Leu
       305             310             315             320

       Gln Ala Asp Ser Tyr Ser Pro Asn Leu Pro Lys Ser Thr Thr Lys Ala
                   325             330             335

       Ala Lys Met Met Asn Gln Gln Arg Thr Lys Met Glu Ile Lys Glu Ser
               340             345             350

       Ser Ser Phe Asp Phe Arg Thr Ser Glu Ile Ser Ala Lys Glu Glu Leu
 50            355             360             365

       Val Leu His Pro Ala Lys Ser Ser Thr Ser Phe Asp Phe Leu Glu Leu
               370             375             380

       Asn Tyr Ser Phe Asp Lys Asn Ala Asp Thr Thr Met Lys Trp Gln Thr
       385             390             395             400
```

```
    Lys Ala Phe Pro Ile Val Gly Glu Pro Leu Gln Lys His Gln Ser Leu
                    405             410             415

    Asp Leu Gly Ser Leu Leu Phe Glu Gly Cys Ser Asn Ser Lys Pro Val
                420             425             430

    Asn Ala Ala Gly Arg Tyr Phe Asn Ser Lys Val Pro Ile Thr Arg Thr
                435             440             445

10  Lys Ser Thr Pro Phe Glu Leu Ile Gln Gln Arg Glu Thr Lys Glu Val
                450             455             460

    Asp Ser Lys Glu Asn Phe Ser Tyr Leu Glu Ser Gln Pro His Asp Ser
    465             470             475             480

    Cys Phe Val Glu Met Gln Ala Gln Lys Val Met His Val Ser Ser Ala
                    485             490             495

20  Glu Leu Asn Tyr Ser Leu Pro Tyr Asp Ser Lys His Gln Ile Arg Asn
                    500             505             510

    Ala Ser Asn Val Lys His His Asp Ser Ser Ala Leu Gly Val Tyr Ser
                515             520             525

    Tyr Ile Pro Leu Val Glu Asn Pro Tyr Phe Ser Ser Trp Pro Pro Ser
        530             535             540

    Gly Thr Ser Ser Lys Met Ser Leu Asp Leu Pro Glu Lys Gln Asp Gly
    545             550             555             560
30
    Thr Val Phe Pro Ser Ser Leu Leu Pro Thr Ser Ser Thr Ser Leu Phe
                    565             570             575

    Ser Tyr Tyr Asn Ser His Ser Ser Leu Ser Leu Asn Ser Pro Thr Asn
                580             585             590

    Ile Ser Ser Leu Leu Asn Gln Glu Ser Ala Val Leu Ala Thr Ala Pro
                595             600             605

40  Arg Ile Asp Asp Glu Ile Pro Pro Pro Leu Pro Val Arg Thr Pro Glu
        610             615             620

    Ser Phe Ile Val Val Glu Glu Ala Gly Glu Phe Ser Pro Asn Val Pro
    625             630             635             640

    Lys Ser Leu Ser Ser Ala Val Lys Val Lys Ile Gly Thr Ser Leu Glu
                645             650             655

    Trp Gly Gly Thr Ser Glu Pro Lys Lys Phe Asp Asp Ser Val Ile Leu
50              660             665             670

    Arg Pro Ser Lys Ser Val Lys Leu Arg Ser Pro Lys Ser Gly Lys Asn
                675             680             685

    Phe Ser Trp Leu
                690
```

```
<210> 5
<211> 802
<212> PRT
<213> Mus musculus

<400> 5
Met Asp Gln Arg Glu Ile Leu Gln Gln Leu Leu Lys Glu Ala Gln Lys
  1               5                  10                  15
```

10
```
    Lys Lys Leu Asn Ser Glu Glu Phe Ala Ser Glu Phe Leu Lys Leu Lys
                 20                  25                  30
```

```
    Arg Gln Ser Thr Lys Tyr Lys Ala Asp Lys Ile Tyr Pro Thr Thr Val
             35                  40                  45
```

```
    Ala Gln Arg Pro Lys Asn Ile Lys Lys Asn Arg Tyr Lys Asp Ile Leu
             50                  55                  60
```

20
```
    Pro Tyr Asp His Ser Leu Val Glu Leu Ser Leu Leu Thr Ser Asp Glu
    65                  70                  75                  80
```

```
    Asp Ser Ser Tyr Ile Asn Ala Ser Phe Ile Lys Gly Val Tyr Gly Pro
                 85                  90                  95
```

```
    Lys Ala Tyr Ile Ala Thr Gln Gly Pro Leu Ser Thr Thr Leu Leu Asp
                100                 105                 110
```

```
    Phe Trp Arg Met Ile Trp Glu Tyr Arg Ile Leu Val Ile Val Met Ala
             115                 120                 125
```

30
```
    Cys Met Glu Phe Glu Met Gly Lys Lys Lys Cys Glu Arg Tyr Trp Ala
             130                 135                 140
```

```
    Glu Pro Gly Glu Thr Gln Leu Gln Phe Gly Pro Phe Ser Ile Ser Cys
    145                 150                 155                 160
```

```
    Glu Ala Glu Lys Lys Lys Ser Asp Tyr Lys Ile Arg Thr Leu Lys Ala
                 165                 170                 175
```

40
```
    Lys Phe Asn Asn Glu Thr Arg Ile Ile Tyr Gln Phe His Tyr Lys Asn
                 180                 185                 190
```

```
    Trp Pro Asp His Asp Val Pro Ser Ser Ile Asp Pro Ile Leu Gln Leu
             195                 200                 205
```

```
    Ile Trp Asp Met Arg Cys Tyr Gln Glu Asp Asp Cys Val Pro Ile Cys
        210                 215                 220
```

50
```
    Ile His Cys Ser Ala Gly Cys Gly Arg Thr Gly Val Ile Cys Ala Val
    225                 230                 235                 240
```

```
    Asp Tyr Thr Trp Met Leu Leu Lys Asp Gly Ile Ile Pro Lys Asn Phe
                 245                 250                 255
```

```
    Ser Val Phe Asn Leu Ile Gln Glu Met Arg Thr Gln Arg Pro Ser Leu
                 260                 265                 270
```

```
     Val Gln Thr Gln Glu Gln Tyr Glu Leu Val Tyr Ser Ala Val Leu Glu
             275             280             285

     Leu Phe Lys Arg His Met Asp Val Ile Ser Asp Asn His Leu Gly Arg
             290             295             300

     Glu Ile Gln Ala Gln Cys Ser Ile Pro Glu Gln Ser Leu Thr Val Glu
     305             310             315             320

10   Ala Asp Ser Cys Pro Leu Asp Leu Pro Lys Asn Ala Met Arg Asp Val
                     325             330             335

     Lys Thr Thr Asn Gln His Ser Lys Gln Gly Ala Glu Ala Glu Ser Thr
                 340             345             350

     Gly Gly Ser Ser Leu Gly Leu Arg Thr Ser Thr Met Asn Ala Glu Glu
             355             360             365

     Glu Leu Val Leu His Ser Ala Lys Ser Ser Pro Ser Phe Asn Cys Leu
20       370             375             380

     Glu Leu Asn Cys Gly Cys Asn Asn Lys Ala Val Ile Thr Arg Asn Gly
     385             390             395             400

    ·Gln Ala Arg Ala Ser Pro Val Val Gly Glu Pro Leu Gln Lys Tyr Gln
                     405             410             415

     Ser Leu Asp Phe Gly Ser Met Leu Phe Gly Ser Cys Pro Ser Ala Leu
                 420             425             430
30
     Pro Ile Asn Thr Ala Asp Arg Tyr His Asn Ser Lys Gly Pro Val Lys
             435             440             445

     Arg Thr Lys Ser Thr Pro Phe Glu Leu Ile Gln Gln Arg Lys Thr Asn
         450             455             460

     Asp Leu Ala Val Gly Asp Gly Phe Ser Cys Leu Glu Ser Gln Leu His
     465             470             475             480

40   Glu His Tyr Ser Leu Arg Glu Leu Gln Val Gln Arg Val Ala His Val
                 485             490             495

     Ser Ser Glu Glu Leu Asn Tyr Ser Leu Pro Gly Ala Cys Asp Ala Ser
             500             505             510

     Cys Val Pro Arg His Ser Pro Gly Ala Leu Arg Val His Leu Tyr Thr
             515             520             525

     Ser Leu Ala Glu Asp Pro Tyr Phe Ser Ser Ser Pro Pro Asn Ser Ala
50       530             535             540

     Asp Ser Lys Met Ser Phe Asp Leu Pro Glu Lys Gln Asp Gly Ala Thr
     545             550             555             560

     Ser Pro Gly Ala Leu Leu Pro Ala Ser Ser Thr Thr Ser Phe Phe Tyr
             565             570             575
```

```
Ser Asn Pro His Asp Ser Leu Val Met Asn Thr Leu Thr Ser Phe Ser
            580             585                 590

Pro Pro Leu Asn Gln Glu Thr Ala Val Glu Ala Pro Ser Arg Arg Thr
            595             600             605

Asp Asp Glu Ile Pro Pro Pro Leu Pro Glu Arg Thr Pro Glu Ser Phe
            610             615             620

Ile Val Val Glu Glu Ala Gly Glu Pro Ser Pro Arg Val Thr Glu Ser
625             630             635             640

Leu Pro Leu Val Val Thr Phe Gly Ala Ser Pro Glu Cys Ser Gly Thr
            645             650             655

Ser Glu Met Lys Ser His Asp Ser Val Gly Phe Thr Pro Ser Lys Asn
            660             665             670

Val Lys Leu Arg Ser Pro Lys Ser Asp Arg His Gln Asp Gly Ser Pro
            675             680             685

Pro Pro Pro Leu Pro Glu Arg Thr Leu Glu Ser Phe Phe Leu Ala Asp
            690             695             700

Glu Asp Cys Ile Gln Ala Gln Ala Val Gln Thr Ser Ser Thr Ser Tyr
705             710             715             720

Pro Glu Thr Thr Glu Asn Ser Thr Ser Ser Lys Gln Thr Leu Arg Thr
            725             730             735

Pro Gly Lys Ser Phe Thr Arg Ser Lys Ser Leu Lys Ile Phe Arg Asn
            740             745             750

Met Lys Lys Ser Val Cys Asn Ser Ser Ser Pro Ser Lys Pro Thr Glu
            755             760             765

Arg Val Gln Pro Lys Asn Ser Ser Ser Phe Leu Asn Phe Gly Phe Gly
            770             775             780

Asn Arg Phe Ser Lys Pro Lys Gly Pro Arg Asn Pro Pro Ser Ala Trp
785             790             795             800

Asn Met
```

```
<210> 6
<211> 82
<212> DNA
<213> Homo sapiens

<400> 6
aaactccgaa gtcctaaatc aggtaaaaat ttctcttggc tttagatgac atttagccct 60
aagattggaa gaatggttcg tt                                          82


<210> 7
<211> 14
```

```
<212> PRT
<213> Homo sapiens

<400> 7
Lys Leu Arg Ser Pro Lys Ser Gly Lys Asn Phe Ser Trp Leu
  1               5                  10
```